Consumer Responses to Online Food Retailing

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Consumer behavior in the context of online food retail channels is analyzed. The research is a follow-up to an earlier study conducted in early 1998 on consumer response to online food shopping. In the 1998 study (N=243), a majority of the sample (51 percent) were "new" users of online food shopping (< 6 months); 35 percent were "intermediate" users (1–6 months); and only 14 percent were "experienced" users (> 6 months). In contrast, the new user segment in the follow-up study (N=412) was 29 percent; the intermediate segment was 28 percent; and the experienced group was 43 percent. Demographic profiles and shopping behaviors of respondents in the two studies are compared. Using cluster analysis, four distinct segments of online food shoppers are identified. Marketing strategy implications for online retailers and store retailers are discussed.

Introduction

Predictions concerning demand for online food shopping run the full gamut from best- to worst-case scenarios. The reality is that current online grocery sales ($200 million in 1999) are meager at best when compared to annual supermarket volume ($400 billion). However, online revenues are growing at a faster rate than store revenues and are predicted to continue to outpace store revenues into the future (Radice, 1999). Michael Sansolo, senior vice president of the Food Marketing Institute, predicts that existing store retailers will be the key players in the future of online food marketing (Mathews, 1999).

Some believe that either/or discussions about brick-and-mortar versus online channel competition are inappropriate and that the most viable model for the future is some combination of both (Donegan, 2000). Others predict a bifurcation of the market where lower margin, lower involvement goods are sold primarily through online channels and higher margin, in-store experience goods (for example, produce) are sold predominately through store channels (Hickins, 2000). One forecast states that the greatest benefit of online grocery shopping to consumers will be easy replenishment of staple items, such as dry goods, soaps, paper products, and other typical pantry items (Donegan, 2000). Peterson, Balasubramanian, and Bronnenberg (1997) argue that all Internet-related marketing activities take place in the context of marketing activities in conventional marketing channels and should be considered in this context.

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Background and Purpose

Which consumers are most likely to use an online grocer? The Consumer Direct Cooperative conducted a two-year study involving interviews with more than 1,800 consumers nationwide and tracked the purchasing histories of 800 online shoppers (Kutz, 1998). Their research identified five major groups of potential online grocery shoppers based on respondents' attitudes toward time, shopping, and technology. The group they termed "Shopping Avoiders" dislikes grocery shopping while "Necessity Users" have limitations that make going to a store difficult. "New Technologists" are young and comfortable with technology while the "Time Starved" are less sensitive to price and will pay extra to free up time in their schedules. The group termed "Responsibles" has available time and gets an enhanced sense of self-worth from shopping. The research indicated that the groups cut across income and educational levels, age groups, and geographic locations.

While online grocers vary somewhat in how they describe their ideal customer, a frequent description is the suburbanite with a higher income (Ingram, 1999; Kirsner, 1999; Lardner, 1998; Ransdell, 1998). Research suggests, however, that this description may be too narrow. Park et al. (1998) conducted focus group interviews with consumers who had previous experience with home shopping for groceries. The researchers categorized home grocery shoppers into two groups: hi-tech baby boomers and older/physically challenged consumers. Hi-tech baby boomers were interested in home shopping for the convenience or the novelty and typically used the computer to order items. In contrast, the second group was composed of older and/or physically challenged consumers who had

lower incomes and were more likely to live alone. They typically bought groceries via home ordering because of physical difficulty in going to the store and tended to phone in orders when possible rather than ordering directly online.

Research by Hiser, Nayga, and Capps (1999) also confirms that consumers other than those in suburban dual-income households may be a viable market segment for online grocery shopping. They surveyed 390 consumers in four supermarkets in Texas. About one-third of the shoppers were familiar with online food shopping even though it was not available in the market area at the time of the survey. Logit analyses indicated that income, the number of people living in the household, the presence of children, and gender were *not* significant determinants of interest in using an online grocer; however, age and education were. People over age 50 were less likely to consider using the service (compared to people 18–29 years old) as were those with less education.

In a recent study, Ward (2000) modeled consumer channel choice (online vs. store) and estimated the effects of various demographic variables. He found that, after controlling for demographic factors, experience with online shopping increased consumer willingness to purchase online. He found that the likelihood of making an online purchase increased steadily with the amount of time that one had been an Internet user. In addition, more experienced users were more proficient shoppers. Ward included 17 different product categories in his analyses (including food and beverages) and found consistent results across product categories. He concluded that the number of consumers with access to online shopping is increasing exponentially and that experience influences online purchase behavior.

The purpose of the present study was to provide a follow-up perspective on a study of online food shoppers conducted in 1998. This study was not a panel study (same subjects at two different points in time) but a trend survey (a new sample was drawn at a second point in time to learn what changes may have occurred). In the earlier study (Study 1: N=243), more than one-half (51 percent) of respondents were "new" users (buying food online for less than one month); 35 percent were "intermediate" users (1–6 months); and 14 percent were "experienced" users (more than six months' use). Our purpose in conducting this follow-up study (Study 2: N=412) with customers of the same online grocer was to answer two research questions about consumer demand for and response to online food shopping. First, we asked if consumer experience with online food shopping was changing. That is, would the distribution of new, intermediate, and experienced users be different 18 months later? Second, as suggested by Ward's (2000) research, we asked how experience with online grocery shopping relates to other consumer behaviors and demographic characteristics. Third, we asked if it was possible to segment the online grocery shoppers based on demographic and behavioral variables.

Method

Data for the follow-up study were collected in August through November 1999 from 412 consumers who purchased groceries from Schnucks Express Connection, the Internet shopping service of Schnucks Markets, a St. Louis-based chain of 92 stores in Illinois, Missouri, and Indiana. Schnucks Markets is privately owned and reported sales of $2 billion in 1999 (*Supermarket News*, 2000). At the time of data collection, Schnucks offered the service in the St. Louis market area plus other markets in Missouri, Illinois, and Indiana. Schnucks Express Connection shoppers can choose to pick up their orders or to have them delivered. The costs are about $13 for same-day delivery, $10 for next-day delivery, and $6 if the consumer picks up the order. A minimum order of $10 is required.

During the survey period, a shopper who completed an order at the Schnucks Web site was invited to click on a link to the researcher's site to answer questions about online grocery shopping. Incentives were not offered to complete the survey. Once at the site, shoppers were asked to respond to 29 questions; 22 were closed-end questions, and seven were open-end questions. Only a subset of the data are reported in this paper. Responses to one open-end question—What specific grocery items would you not buy online?—are reported in this paper. The data from the closed-end questions reported in this paper came from questions asked of consumers regarding:

(1) length of time buying groceries online;

(2) whether groceries were usually delivered or picked up;

(3) reasons for shopping online;

(4) most important reason to shop online;

(5) whether there were grocery items they would not buy online;

(6) perception of time spent grocery shopping online versus in-store;

(7) where online grocery items were previously bought;

(8) where most grocery items are currently bought;

(9) amount spent on most recent online grocery order;

(10) how most recent order compares to average order amount;

(11) frequency of ordering online for groceries;

(12) age;

(13) gender;

(14) education;

(15) number of children in household;

(16) number of adults in household;

(17) income; and

(18) zip code.

Including zip code information in the collected data served two purposes. First, it allowed the researchers to identify the market area in which the respondent lived. In addition, zip code information and other demographic data could be compared to eliminate responses that matched perfectly and thus were likely from the same household.

Results

We compiled a demographic profile of who was grocery shopping online using the following variables: age, gender, education, market area, household size, and income. Comparative profiles for respondents in Study 1 (April–June 1998) and Study 2 (August–November 1999) are provided in Table 1. The demographic profiles were similar on most variables across the two studies.

Table 1. Demographic Variables for Study 1 and Study 2 Participants.

Variable	Study 1 Percent of total	Study 2 Percent of total	Chi-Square
Age			1.53
34 or younger	33.8	30.3	
35–44	34.6	37.6	
45–54	22.5	21.1	
55 or older	9.2	10.9	
Gender			0.02
Male	17.7	17.3	
Female	82.3	82.7	
Educational Level			2.59[b]
High school education or less	8.0	10.2	
High school graduate w/ some college education	34.3	38.3	
College graduate	57.7	51.5	
Income ($)			6.02
29,999 or less	11.8	11.7	
30,000–49,999	14.1	21.1	
50,000–69,999	23.6	17.8	
70,000 or more	50.5	49.4	
Number of Adults			8.95[b]
One	19.9	22.8	
Two	63.2	68.2	
Three or more	16.9	9.0	
Number of Children			49.00[a]
Zero	16.9	48.1	
One	27.3	14.3	
Two	35.7	20.6	
Three or more	20.1	17.0	
Market Area			1.35
St. Louis, Missouri area	57.1	50.0	
Other markets	42.9	50.0	

[a] $p < .001$.
[b] $p < .05$.
[c] $p < .10$.

The majority of respondents in both studies were younger than 45 years of age (68 percent), female (82 percent vs. 83 percent), and had some college education or a college degree (92 percent vs. 90 percent). Many reported an annual income of $70,000 or more (51 percent vs. 49 percent), while 12 percent in both studies had an annual income below $30,000. In most households, there were two adults (63 percent vs. 68 percent) in both studies. One-half or more of the respondents in both studies lived in the St. Louis, Missouri market area (57 percent vs. 50 percent).

Demographic Characteristics

Many of the respondents in both studies matched the description of online grocery shoppers typically provided by online grocers—suburbanites with incomes higher than $75,000 (Ingram, 1999; Kirsner, 1999; Lardner, 1998; Ransdell,1998). However, chi-square analyses indicated a significant relationship between being in Study 1 vs. Study 2 and three demographic variables. Study 1 respondents were somewhat better educated than Study 2 respondents; 58 percent were college graduates, versus 52 percent in Study 2. There were more single-adult households in Study 2 than there were in Study 1. Chi-square analyses also indicated a significant relationship between being in Study 1 vs. Study 2 and in the number of children in the household. Almost one-half (48 percent) of respondents in Study 2 had no children, compared to 17 percent in Study 1. However, 37 percent of the respondents in Study 1 did not answer this question. The format of the question was changed for Study 2, and all respondents answered it. If the question design in Study 1 led households without children to leave that answer blank, the proportion of respondents in Study 1 without children would have been very similar to the proportion in Study 2 (46 percent vs. 48 percent, respectively).

Shopping Behavior Results

While the overall demographic profile of online shoppers was not substantially different 18 months after the first study, notable shifts were observed in various shopping behaviors (Table 2). First, respondents had more experience with online grocery shopping. Fourteen percent of Study 1 respondents said that they had been buying groceries online for more than six months; 35 percent for between one and six months; and a majority (51 percent) for less than one month. However, in Study 2, 43 percent of the respondents had more than six months' experience buying groceries online, a difference of 29 percent. Furthermore, compared to Study 1, far fewer of the online shoppers in Study 2 were new online grocery shoppers [22 percent fewer in Study 2 (29 percent) than in Study 1 (51 percent)]. Most (90) of the 120 new users in Study 2 indicated that the order they placed at the time they responded to the survey was their first online grocery purchase.

Among the rest of the Study 2 sample, 22 percent said that they grocery shopped online once a week; 36 percent, every two weeks; 27 percent, every four weeks; and 15 percent, every six to eight weeks. The median order amount in Study 2 was $115, and the mean was $134. (We did not ask this question in Study 1.) Excluding first-time orderers, two-thirds of the respondents said that the dollar amount listed was typical of an average order.

Respondents in Study 2 continued to favor delivery (79 percent) over pick up (19 percent), and this was the only shopping behavior for which we did not detect a statistically significant difference between studies. There were notable differences between Study 1 and Study 2 respondents in their willingness to buy all or most of their groceries online. A majority of Study 2 respondents (62 percent) said that they now buy all or most of their groceries online, compared to 19 percent of respondents in Study 1. These differences may be indicative of some movement away from a complementary model of channel choice (purchasing online *and* in retail stores).

Among Study 2 respondents who continued to buy most of their groceries in a retail store, 71 percent said that they bought most of their groceries at Schnucks stores; 10 percent said other supermarkets; and 19 percent reported that they bought most of their groceries elsewhere, including combinations of more than one type of retail store. Study 2 respondents were also asked where they previously bought the groceries they now buy online. Sixty-two percent said that the online items were previously purchased at the retailer's stores; 30 percent at other supermarkets; 3 percent at supercenters; 2 percent at limited line discount stores; and 1 percent at warehouse clubs.

Thus, it appears that there is a reasonably large transfer of online sales from the retailer's stores to the retailer's online channel. For this retailer, online

Table 2. Shopping Behavior Variables for Study 1 and Study 2 Participants.

Variable	Study 1 Percent of total	Study 2 Percent of total	Chi-Square
Experience with online grocery shopping			62.60[a]
Less than one month	51.2	29.2	
One to six months	34.7	27.5	
More than six months	14.1	43.3	
Usually have groceries delivered or pick up order			1.28
Delivered	75.4	79.2	
Pick up	21.7	18.5	
Pick up as often as have delivered	2.9	2.3	
Buy groceries only or mostly online			111.03[a]
No	80.7	37.7	
Yes	19.3	62.3	
Most important reason to shop online			80.44[a]
Convenience/time	73.6	53.3	
Physical constraints	14.9	18.3	
Hate grocery shopping/hate grocery stores	5.0	13.0	
Buying for a business	2.5	0.8	
Can avoid impulse buying	1.2	3.3	
Do not like standing in line	0.8	3.0	
Other	2.1	8.5	
Grocery items will not buy online			74.42[a]
Nothing	48.4	79.4	
Meats and/or produce	30.2	15.1	
Items cannot buy because are not offered	4.4	0.5	
Perishables	3.9	0.5	
Other	9.9	4.5	
Don't know	3.3	0.0	
Perception of time spent online vs. in-store			107.01[a]
A lot less	30.8	52.6	
Less	21.7	28.5	
Same or more	47.5	19.0	

[a] $p < .001$.
[b] $p < .05$.
[c] $p < .10$.

items are picked directly from stores and then delivered to customers. Sales generated by online orders are added to those of the store from which they were picked. Under such an arrangement, store managers likely view online sales as augmenting store volume rather than detracting from it or at least holding on to store business that might go elsewhere. As noted above, 30 percent of Study 2 respondents said that they previously bought their online purchases at supermarkets *other* than Schnucks. This likely indicates a transfer of sales from competing store retailers into the retailer's online channel. Thus, the online channel may provide a way to "protect" existing store sales and to attract customers from competing stores.

Chi-square analyses also indicated a significant relationship between Study 1 vs. Study 2 and the primary reason for grocery shopping online. While a majority of Study 2 respondents (53 percent) cited convenience as the most important reason for buying groceries online, the proportion was substantially less than that in Study 1 (74 percent). However, a higher proportion (53 percent) of Study 2 respondents said that, by moving their grocery shopping online, they were spending a lot less time grocery shopping (31 percent in Study 1). This likely reflects the greater experience of Study 2 respondents with online grocery shopping. "Hating" grocery shopping and grocery stores was cited more often in Study 2 (13 percent) than in Study 1 (5 percent) as the primary reason for grocery shopping online. In addition, physical constraint issues—such as disabilities that made driving, shopping, and carrying groceries difficult or impossible—were somewhat more likely

to be cited as the primary reason for online grocery shopping in Study 2 (18 percent) than they were in Study 1 (15 percent).

A far higher proportion of Study 2 respondents was willing to buy any grocery item online. A majority of Study 2 respondents (79 percent) said that they were willing to buy any grocery item online, compared to 48 percent in Study 1. All product categories appeared to gain in consumer acceptability. For example, nearly one-third of the respondents in Study 1 listed meat or produce as items that they would not purchase online. In Study 2, this proportion dropped to 15 percent and may indicate expansion of the consumer's "consideration set" (Lehmann and Pan, 1994; Nedugade, 1990; Shocker et al., 1991) for products purchased online.

Relationships Between Demographics and Shopping Behaviors

Relationships between variables within each study were analyzed and are reported in Table 3. The overall pattern of relationship between variables was fairly similar for each study. A number of demographic variables were significantly related to the most important reason for shopping online.

Compared to those who cited physical constraints as most important, those that shopped online for other reasons, including convenience, tended to have higher incomes, were younger, and lived in households with larger numbers of adults and children. Of those who shopped online for reasons other than physical constraints, 56 percent (Study 1) and 55 percent (Study 2) reported annual incomes of $70,000 or more, compared to 18 percent (Study 1) and 23 percent (Study 2) of those who shopped online due to physical constraints. Of those who shopped online primarily due to physical constraints, 20 percent (Study 1) and 32 percent (Study 2) were aged 55 or over, compared with 5 percent (Study 1) and 6 percent (Study 2) of those who shopped online for other reasons. Those who shopped online for reasons other than physical constraints were more likely to say that online shopping saved time than were those for whom physical constraints were the primary reason for grocery shopping online. Education was also significantly related to the most important reason for shopping online but only in Study 2. In Study 2, 29 percent of those who shopped online due to physical constraints said that they were high school graduates with some college, compared to 41 percent of those who shopped online for other reasons.

With the exception of education in Study 2, demographic variables were not significantly related to willingness to buy any grocery item online in either study. Respondents in Study 2 who restricted their online choices to only some grocery items were somewhat more likely to be college graduates (64 percent) than were those who said that they would buy any food or grocery item online (49 percent). Furthermore, in Study 2, there was a marginally significant relationship between willingness to buy any grocery item online and the respondent's perception of time spent grocery shopping. Fifty-five percent of respondents who were willing to buy any grocery item online said that they spent a lot less time grocery shopping since moving their purchases online, compared to 46 percent of those who restricted their online choices.

With the exception of education in Study 2, demographic variables were not significantly related to perception of time spent shopping online versus in a retail store. Respondents in Study 2 who thought shopping online took less time tended to be better educated. In both studies, those who thought shopping online took less time were more likely to cite reasons other than physical constraints as their most important reason for shopping online and were more likely to state that they buy all or most of their groceries online. Furthermore, in Study 2, those who thought online shopping took less time were more likely to be experienced users (> 6 months).

In both studies, age was related to experience with online grocery shopping. New users (< 1 month) tended to be somewhat younger than more experienced users (> 6 months). In Study 2, perception of time spent shopping online versus in the store was significantly related to experience with online grocery shopping. Among those using the online service less than one month, only 38 percent said that shopping online took a lot less time than in-store shopping, compared to 58 percent of those with more than six months' experience.

Segmentation of Online Food Shoppers

Cluster analysis was used to classify online food shoppers from Study 2 into segments, using demographic variables (age, gender, education, income, number of adults in household, and number of children in household) and shopping variables (where most groceries bought, reason to shop online, willingness to buy all items online, perception of time spent shopping, and experience level). As a

Table 3. Relationships Between Demographic Characteristics and Shopping Behaviors for Study 1 and Study 2 Participants.

Demographic and Other Online Shopping Variables	Online Shopping Variables							
	Most important reason to shop online		Willing to buy all grocery items online		Perception of time spent online vs. in-store		Experience with online grocery shopping	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Age	20.69[a]	55.52[a]	5.90	5.71	6.90	10.54	9.61[b]	26.58[a]
Gender	0.08	0.04	2.37	0.11	1.29	0.59	0.42	2.09
Education	0.75	6.97[b]	3.89	6.77[b]	7.48	9.29[c]	6.41[b]	4.44
Income	23.03[a]	30.78[a]	0.33	4.79	14.23	7.06	1.44	5.40
Number of adults in household	19.36[a]	20.23[a]	3.80	2.03	10.28	6.96	4.44	3.34
Number of children in household	23.34[a]	28.21[a]	3.90	0.67	10.47	1.55	3.07	3.14
Market area	4.84[b]	9.53[b]	6.37[b]	1.63	0.90	2.46	12.05[a]	0.04
Buy groceries only or mostly online	0.00	0.21	7.77[b]	0.29	6.77[c]	13.68[a]	0.21	2.40
Most important reason to shop online	-----	-----	2.72[c]	1.74	5.70[a]	11.21[b]	0.03	2.64
Willing to buy all grocery items online	2.72[c]	1.74	-----	-----	1.42	5.35[c]	0.36	0.50
Perception of time spent online vs. in-store	5.70[a]	11.21[b]	1.42	5.35[c]	-----	-----	3.30	14.44[b]
Experience with online grocery shopping	0.03	2.64	0.36	0.50	3.30	14.44[b]	-----	-----

[a] $p < 0.001$.
[b] $p < 0.05$.
[c] $p < 0.10$.

result of cluster analysis, a four-cluster solution emerged. Mean scores and standard deviations for demographic and shopping behavior variables by clusters are presented in Table 4.

The four-cluster solution was validated using discriminant analysis, ANOVA, and a scatter plot of clusters. The result of discriminant analysis showed that 97 percent of respondents were correctly classified (Table 5). Finally, a scatter plot of the clusters provided evidence that the clusters occupied distinct positions when graphically arranged. Thus, we found support for segmenting this group of online food shoppers.

Cluster 1: Physically Constrained Shoppers (16%)

Consumers in this cluster were primarily motivated to use the online channel for grocery purchases due to physical constraints that hindered their ability to shop, drive, or carry groceries. In contrast, the three other clusters were primarily motivated by convenience and time savings factors. An inspection of the qualitative comments provided by respondents revealed that physical constraints were minor to major in nature and interfered with completion of the grocery shopping task. Some typical comments made by respondents follow:

"I recently had surgery and it is very difficult carrying groceries up two flights of stairs."

"My husband has arthritis, and I have back problems; the online shopping takes care of the heavy and pantry items."

"It is hard for me to stand and walk a long time, especially in big stores and long lines of waiting to get checked out."

"I am not able to walk well and cannot carry and make trips to carry into apartment."

"My arthritis is bad enough that walking and carrying wear me out after a very short time. By using the computer, I still have control myself instead of depending on my family."

"I am in a wheelchair and cannot drive or carry groceries."

"I have been in and out of hospitals the last year. I loved the convenience of shopping this way and am somewhat healthier now; however, walking and bending are still a problem, and I love shopping this way. I plan on continuing."

"My husband and I are both physically unable to walk long distances or to carry heavy objects. This is a real life saver for us."

"I hurt my back! They deliver the groceries to my kitchen counter. This is a tremendous help. Also, I have a sick person in the home and can't leave."

As might be deduced from these comments, Physically Constrained Shoppers tended to be older than shoppers in the other three clusters. In addition, household income was lower than among Female Involved Shoppers (Cluster Two) or Female Convenience Shoppers (Cluster Four). There were fewer children in the households of Physically Constrained Shoppers than there were in Female Involved Shopper or Female Convenience Shopper households. Physically Constrained Shoppers included both male and female respondents, in contrast to Cluster Two and Cluster Four (which were exclusively female) and Cluster Three (which was exclusively male).

Cluster 2: Female Involved Shoppers (55%)

This exclusively female cluster differed from the Physically Constrained Cluster in several ways. Compared to Physically Constrained Shoppers, Female Involved Shoppers were younger, had higher incomes, and had more children in the household. Female Involved Shoppers were fairly similar to Female Convenience Shoppers (Cluster Four); however, they differed in one important way. Female Involved Shoppers were less willing to buy all grocery items online (especially meat and produce) than were Female Convenience Shoppers. It appears likely that many of the Female Involved Shoppers will continue to patronize both store and online channels because they want personal involvement in selecting some grocery items. Some typical comments follow:

"I usually make one trip to the store for produce and sometimes meat. I like to see the fruits and veggies so I know how ripe or fresh they are. Meats are easier to see too."

"I don't like to buy my produce online. It's just a personal thing and I want fruit that looks a certain way."

Table 4. Cluster Means and Standard Deviations.

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	F Value
Age	2.77 (1.06)	2.02 (.82)	1.89 (1.03)	1.69 (.74)	14.75[a]
Gender	1.15 (.36)	1.00 (.00)	2.00 (.00)	1.00 (.00)	591.87[a]
Education	2.38 (.75)	2.41 (.67)	2.51 (.63)	2.57 (.54)	1.09
Income	2.42 (1.11)	3.12 (1.07)	3.00 (1.00)	3.57 (.71)	11.08[a]
Adults in household	1.85 (.70)	1.88 (.50)	1.78 (.64)	2.08 (.34)	2.86[b]
Children in household	.44 (.85)	1.23 (1.14)	.67 (1.07)	1.33 (1.09)	10.06[a]
Buy groceries only or mostly online	1.33 (.47)	1.37 (.51)	1.38 (.58)	1.33 (.47)	.21
Most important reason to shop online	1.00 (.00)	1.99 (.02)	1.98 (.15)	1.98 (.14)	1,549.31[a]
Willing to buy all grocery items online	1.83 (.38)	1.96 (1.9)	1.82 (.39)	1.02 (.14)	165.54[a]
Perception of time spent online vs. in-store	1.98 (.83)	1.59 (.78)	1.62 (.72)	1.63 (.73)	3.49[b]
Experience with online grocery shopping	2.35 (.74)	2.16 (.85)	1.91 (.87)	2.20 (.82)	2.25[c]

[a] $p < .001$.
[b] $p < .05$.
[c] $p < .10$.

Table 5. Classification Matrix for Four-Group Discriminant Analysis.[a]

		Predicted Group Membership			
Actual Group	# of cases	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Cluster 1	52	52 100.0%	0 0.0%	0 0.0%	0 0.0%
Cluster 2	179	1 .6%	171 95.5%	0 0.0%	7 3.9%
Cluster 3	45	1 2.2%	0 0.0%	44 97.8%	0 0.0%
Cluster 4	47	0 0.0%	0 0.0%	0 0.0%	47 100.0%

[a]Percent of grouped cases correctly classified: 97.2%.

"I am afraid that I will not get quality (fresh fruit and produce) merchandise."

"I'd rather look at it (meats) and pick it out myself. Most of the time I feel that way about produce as well."

"I am very particular and would prefer to see these items (produce and meat) before purchasing."

"I don't like to buy produce (online). I have in the past, and the shopper's quality standard did not match mine."

Cluster 3: Male Convenience Shoppers (14%)

This exclusively male cluster was motivated to shop online by convenience (similar to Female Involved Shoppers and Female Convenience Shoppers). In addition, Male Convenience Shoppers were younger than Physically Constrained Shoppers (Cluster One); however, Male Convenience Shoppers were less likely to have children living in the household than were either Female Involved Shoppers or Female Convenience Shoppers. Male Convenience Shoppers deviate from the stereotypical image of the online segment as busy suburban families. Some typical comments follow:

"Grocery shopping is a necessary evil. Doing it online, I can still get it done on my schedule, not based on when the store is less busy."

"Much more convenient (online shopping) and much less hassle, and the deliver charge is reasonable, considering that I would spend at least $10 more at the grocery anyway if I were there 'with' the actual items."

"My free time is more valuable to me than the $10 delivery charge."

"I am going to school and working and I can do my shopping at odd hours."

"I don't enjoy grocery shopping. The stores are usually crowded. The aisles are packed with too many products and advertisements. Generally, the check out is most stressful. Internet shopping is very convenient."

"I am unable to get to the store during the week, and for the cost, I am able to let someone else shop for an hour and bring it to me!"

"I don't like shopping, so doing my shopping online eliminates the problem."

"Online shopping gives me time to do the things I really enjoy."

Cluster 4: Female Convenience Shoppers (15%)

These shoppers were fairly similar to Female Involved Shoppers except that they were younger and household incomes were somewhat higher. An important distinguishing difference between the two clusters was that Female Convenience Shoppers were more willing to buy all grocery items online (including meat and produce) than were Female Involved Shoppers. Female Convenience Shoppers may be less particular about their purchases and have less need to be involved in their selection. Since they are younger, they may also be less knowledgeable about product selection and thus more willing to trust expert pickers. While this cluster was not the largest in terms of numbers, it is an important group from a marketing perspective.

On average, this group had the highest income and the greatest number of children and adults in the household of any of the clusters. Many had younger children and were time-constrained. Some typical comments follow:

"We have young children and both work. I don't want to spend our valuable time together at a grocery store."

"I work full-time; my husband travels; I have children; my schedule is very busy. I love shopping on the Internet because I can also do the laundry and watch TV or a movie all at the same time without leaving the house."

"My 2 year-old doesn't want to stay in the cart, and it is hard to concentrate and watch him. If I do have a sitter, I have other things I prefer to do."

"I can spend the quality time at home with the kids, rather than spending the hour with them shopping."

Discussion and Implications

Before discussing the results, limitations should be acknowledged. A non-probability sample for a specific Internet grocery shopping service was used. Therefore, generalizations to other audiences may not be appropriate. In addition, the online grocer was affiliated with a supermarket that is well-known in the communities it serves and has local stores in those communities. Thus, the results may not be as applicable for warehouse-based online grocers as they are for store-based online grocers.

The distribution of new, intermediate, and experienced users did change in the 18-month interval between studies. In fact, the change was dramatic—14 percent of respondents in Study 1 were experienced online grocery shoppers, compared to 43 percent in Study 2. However, comparison of the results from the two studies suggests a relatively stable demographic profile of online grocery shoppers. Compared to the general population, online shoppers in both of the studies were better educated, had relative higher incomes, and tended to be somewhat younger. They were also predominantly female. The majority of respondents in both studies lived in households with children.

While there were far more experienced users participating in Study 2, the number of new users in each study was nearly identical (124 vs. 120). From a marketing perspective, this suggests the possibility that the online channel is able to attract a sizable number of new users and retain a portion of these users over time. While we have no specific data on consumers who tried online shopping and returned to in-store shopping, the data suggest that this particular online food retailer has found a way to move at least a portion of in-store shoppers from non-use, to first-time use, to regular online use. (We realize that most retailers would not typically equate "more than six months" with "regular use" status. However, the online channel has been available to consumers for a relatively short period of time.)

Compared to those with less experience, more experienced online grocery shoppers (> 6 months) were disproportionately more likely to say that they now spend a lot less time grocery shopping. Furthermore, those that reported dividends from time savings were disproportionately more likely to say that they buy most or all of their groceries online and were more willing to buy any type of grocery item online. Perhaps one or both of these behaviors is necessary to realize time savings in online grocery shopping. For more experienced online grocery shoppers, the choice set appears to be simultaneously narrowing at one level (online channel) and broadening at another (product types). This change suggests exclusiveness in relation to channel choice and inclusiveness in relation to the product choice.

From the marketer's perspective, this likely represents a highly attractive picture of consumer demand; consumers shop more exclusively with a retailer but are willing to buy a wider range or set of goods from that particular retailer.

It is not possible for us to clearly specify whether the "perception of time spent" variable is an antecedent or consequent variable. That is, does the consumer's belief that online grocery shopping saves time influence their willingness to buy groceries online and to buy all grocery items online?

Or, is it more likely that the consumer's perception of time savings changes with experience, as s/he becomes more willing to buy various items online and to use the online channel for most grocery purchases? We suggest that the influence is likely in both directions. As consumers become more experienced users of this new marketing channel, they may indeed improve their efficiency and reduce the overall time spent to complete the shopping task. Consumers who become online grocery shoppers because of anticipated time savings may be more likely than other consumers to believe that shopping online saves time.

In fact, online shoppers may exhibit what Kahn and McAlister (1997) referred to as a "confirmation bias;" that is, a tendency to see that which confirms what one believes. For example, if consumers perceive an online delivery charge as an added "cost," they may be more likely to perceive a time-savings "benefit" to offset that cost. Thus, perceptions of time-saving efficiencies (whether accurate or not) may be viewed as influencing other consumer behaviors (for example, willingness to buy most items online) as well as being influenced by these variables. Furthermore, if we think of online delivery charges as "fixed" costs, these become proportionately less as the consumer's purchase total per order increases.

It is our view that time perceptions, motivations, experience levels, willingness to buy from alternative channels of distribution, and product item choice sets likely interact in various combinations for different consumer segments. Indeed,

we found preliminary evidence for the segmentation of online grocery shoppers based on motivation, gender, willingness to buy all grocery items online, number of children in the household, and time savings perceptions. According to Schiffman and Kanuk (2000), segmentation of consumer markets is most effective when the segments are identifiable, stable or growing, reachable, and sufficient in size. Our view is that the first three criteria for effective segmentation of the online grocery market likely can be met; however, sufficiency in terms of size is still unknown.

Managerial Implications

Peterson, Balasubramanian, and Bronnenberg (1997) predicted that use of the Internet would not likely contribute to increased consumer spending overall. Instead, as suggested by Hagel and Eisenman (1994), E-commerce would likely result in a *redistribution* of existing revenues among channels or among members within a channel. In our study we found some support for this proposition. Sixty-two percent of respondents in the follow-up study said that the groceries they now buy online were previously bought at that particular retailer's stores.

Their online purchases likely represent a redistribution of revenues into the online channel from the store channel. Perhaps even more surprising is that 30 percent of respondents said that their online purchases were previously bought at competing brick-and-mortar supermarkets, representing what appears to be a redistribution of revenues between retailers.

Park et al. (1998) suggested that, if home shopping becomes "mainstream," it could have a negative effect on supermarket sales. We suggest that home shopping does not have to become "mainstream" to have an impact, given the highly competitive nature of the U.S. market and the notoriously low profit margins within the food retailing industry.

Within such a context, the hybrid model (picking online orders out of existing stores) may be intuitively appealing to store retailers considering entry into retailing. The hybrid model is a fairly low cost method for testing the market (at least when compared with warehouse building). The hybrid model may also allow early entry into the online market with subsequent first mover advantages. In addition, if the store retailer's positioning in existing markets is positive, unique, or service-driven, such positioning may transfer into the online arena.

However, picking from stores is generally considered a more expensive approach than picking from warehouses (especially when compared with efficiencies that can be achieved through state-of-the-art automated warehouses). Therefore, the hybrid model may be an appropriate strategy in testing and introduction stages, but its long-term feasibility from a cost perspective is questionable.

In general, what consumers want from online retailers is similar to what they want from store retailers—convenience, quality, service, reasonable prices, and selection. The retailer's "offer" in the online setting in many ways resembles the parameters of the in-store "offer." However, online food retailing typically includes picking and delivery service considerations. How well retailers manage the unique aspects of online retailing factors may well determine their ultimate success or failure.

Limitations and Directions for Future Research

Our paper was limited to an examination of consumer response to and demand for online food retailing in the context of one type of online business model (hybrid model with in-store picking). However, there are various other business models—including the central distribution model, mini-distribution centers in existing supermarkets, and dual systems in which in-store fulfillment is used for fresh products and dedicated warehouses are used for slower moving items or non-perishables. Research in the context of these different business models is suggested. Analysis of the costs and benefits of various models from the consumer's *and* retailer's perspective is encouraged. Which online strategy is most profitable for retailers? Which is most value-enhancing for consumers? Do different consumer segments see the online service as adding value? Our research suggests that they do. Ultimately, consumers buy from those marketers that they believe offer the highest delivered value—the differential between total benefits and total costs of the marketing offer.

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